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Docket No. GJE-81
Serial No. 10/030,868In the Claims

1-17 (canceled)

18 (currently amended). An apparatus for imaging an object, comprising a probe via which an assay component may be delivered; means for vibrating the probe at a given frequency, substantially normal to the surface of the object; a sensor to detect ion current; means for monitoring modulation of the ion current resulting from the vibration of the probe at the given frequency, while close to the surface of the object; and means to control the distance of the probe from the surface of the object in response to the modulation of the ion current.

19 (previously presented). The apparatus according to claim 18, wherein the probe is a micropipette.

20 (previously presented). The apparatus according to claim 18, wherein the assay component is light.

21 (previously presented). The apparatus according to claim 19, wherein the assay component is light.

22 (previously presented). The apparatus according to claim 20, wherein the probe comprises a fiber optic.

23 (previously presented). The apparatus according to claim 20, which additionally comprises a laser light source.

24 (previously presented). The apparatus according to claim 22, which additionally comprises a laser light source.

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25 (previously presented). The apparatus according to claim 20, wherein the probe contains a light-activatable dye at its tip.

26 (previously presented). The apparatus according to claim 20, wherein the outer surface of the probe is coated to prevent leakage of light.

27 (previously presented). The apparatus according to claim 20, wherein the outer surface of the probe is coated with a metal layer to prevent leakage of light.

28 (previously presented). The apparatus according to claim 18, wherein the probe contains, as the assay component, a substance that, at the surface of a live cell, produces a detectable change.

29 (previously presented). The apparatus according to claim 19, wherein the probe contains, as the assay component, a substance that, at the surface of a live cell, produces a detectable change.

30 (previously presented). The apparatus according to claim 28, wherein said substance generates fluorescence, bioluminescence or chemiluminescence.

31 (previously presented). The apparatus according to claim 29, wherein said substance generates fluorescence, bioluminescence or chemiluminescence.

32 (previously presented). The apparatus according to claim 18, wherein the probe contains, as the assay component, a substance that, on delivery to a live cell, produces a detectable change inside the cell.

33 (previously presented). The apparatus according to claim 19, wherein the probe contains, as the assay component, a substance that, on delivery to a live cell, produces a detectable change inside the cell.

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34 (canceled).

35 (currently amended). A method for imaging an object in a liquid environment, by scanning ion conductance microscopy, which comprises vibrating a probe, at a given frequency, substantially normal to the surface of the object, detecting ion current, monitoring modulation of the ion current resulting from the vibration of the probe while close to the surface of the object, controlling the distance of the probe from the surface of the object in response to the modulation of the ion current, wherein the probe includes means for delivering an assay component to the object.

36 (previously presented). The method according to claim 35, wherein the probe is a micropipette.

37 (previously presented). The method according to claim 35, wherein the probe comprises a fiber optic.

38 (previously presented). The method according to claim 35, wherein the probe contains a light-activatable dye at its tip.

39 (previously presented). The method according to claim 35, wherein the outer surface of the probe is coated with a metal layer to prevent leakage of light.

40 (previously presented). The method according to claim 35, wherein the probe contains, as the assay component, a substance that, at the surface of a live cell, produces a detectable change.

41 (previously presented). The method according to claim 36, wherein the probe contains, as the assay component, a substance that, at the surface of a live cell, produces a detectable change.

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42 (previously presented). The method according to claim 41, wherein said substance generates fluorescence, bioluminescence or chemiluminescence.

43 (previously presented). The method according to claim 35, wherein the probe contains, as the assay component, a substance that, on delivery to a live cell, produces a detectable change inside the cell.

44 (previously presented). The method according to claim 36, wherein the probe contains, as the assay component, a substance that, on delivery to a live cell, produces a detectable change inside the cell.

45 (previously presented). The method according to claim 35, wherein the assay component is light.

46 (previously presented). The method according to claim 45, which additionally comprises a laser light source.

47 (previously presented). The method according to claim 35, wherein the probe contains, as the assay component, a substance that, at the surface of a live cell, produces a detectable change.

48 (previously presented). The method according to claim 47, wherein said substance generates fluorescence, bioluminescence or chemiluminescence.

49 (previously presented). The method according to claim 35, wherein the probe contains, as the assay component, a substance that, on delivery to a live cell, produces a detectable change inside the cell.

50 (previously presented). The method according to claim 35, which comprises generating light and wherein the said distance is less than the wavelength of the light.

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51 (canceled).

52 (previously presented). The method according to claim 35, wherein the object is a live cell.

53 (new). An apparatus for imaging an object, comprising a probe, wherein the probe includes or contains an assay component that can be delivered to a locus of observation, wherein the assay component is a chemical or physical entity; means for vibrating the probe, at a given frequency, substantially normal to the surface of the object; a sensor to detect ion current; means for monitoring modulation of the ion current resulting from the vibration of the probe at the given frequency while close to the surface of the object; and means to control the distance of the probe from the surface of the object in response to the modulation of the ion current.

54 (new). The apparatus according to claim 53, wherein the probe is a micropipette.

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